RECRA LabNet
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Virtual Laboratories Everywhere

0063505

Recra LabNet Philadelphia
Analytical Report

Client : TNU HANFORD B99-038
RFW# : 9903L492
SDG/SAF# : H0362/B99-038

W.O.# : 10985-001-001-9999-00
Date Received: 03-19-99

METALS CASE NARRATIVE

1. This narrative covers the analyses of 3 TCLP leachate samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All ICP analytes were reported at 10 fold dilutions. With the dilutions, the reporting limit is still less than 5% of the RCRA action limit. Due to high concentrations of Mercury in sample BOTK51, the Mercury result was reported with a 1000 fold dilution.

3. All analyses were performed within the required holding times.

4. The cooler temperature has been recorded on the Chain of Custody.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), less than 5% of the RCRA action limit, or the sample results are greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

8. All ICP Interference Check Standards were within control limits.

9. The laboratory control sample (LCS) was within the laboratory control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. The duplicate analyses were within the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

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11. The TCLP extract from sample BOTK48 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

3-29-99
Date

mld/m03-492

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Recra Lot#: 9903L492

Leaching Procedure: __1310 ✓1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: __3005A ✓3010A __3015 __3020A __3050A __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B	__200.7			__99
Antimony	__6010B __7041 [5]	__200.7 __204.2			__99
Arsenic	✓6010B __7060A [5]	__200.7 __206.2	__3113B		__99
Barium	✓6010B	__200.7			__99
Beryllium	__6010B	__200.7			__99
Bismuth	__6010B [1]	__200.7 [1]		__1620	__99
Boron	__6010B	__200.7			__99
Cadmium	✓6010B __7131A [5]	__200.7 __213.2			__99
Calcium	__6010B	__200.7			__99
Chromium	✓6010B __7191 [5]	__200.7 __218.2			__SS17
Cobalt	__6010B	__200.7			__99
Copper	__6010B __7211 [5]	__200.7 __220.2			__99
Iron	__6010B	__200.7			__99
Lead	✓6010B __7421 [5]	__200.7 __239.2	__3113B		__99
Lithium	__6010B __7430 [4]	__200.7		__1620	__99
Magnesium	__6010B	__200.7			__99
Manganese	__6010B	__200.7			__99
Mercury	✓7470A [3] __7471A [3]	__245.1 [2] __245.5 [2]			__99
Molybdenum	__6010B	__200.7			__99
Nickel	__6010B	__200.7			__99
Potassium	__6010B __7610 [4]	__200.7 __258.1 [4]			__99
Rare Earths	__6010B [1]	__200.7 [1]		__1620	__99
Selenium	✓6010B __7740 [5]	__200.7 __270.2	__3113B		__99
Silicon	__6010B [1]	__200.7		__1620	__99
Silica	__6010B	__200.7		__1620	__99
Silver	✓6010B __7761 [5]	__200.7 __272.2			__99
Sodium	__6010B __7770 [4]	__200.7 __273.1 [4]			__99
Strontium	__6010B	__200.7			__99
Thallium	__6010B __7841 [5]	__200.7 __279.2 __200.9			__99
Tin	__6010B	__200.7			__99
Titanium	__6010B	__200.7			__99
Uranium	__6010B [1]	__200.7 [1]		__1620	__99
Vanadium	__6010B	__200.7			__99
Zinc	__6010B	__200.7			__99
Zirconium	__6010B [1]	__200.7 [1]		__1620	__99

Other:_____ **Method:**_____

003

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

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INORGANICS DATA SUMMARY REPORT 03/25/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	B0TK48	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	593		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	282		UG/L	6.0	10.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Lead, TCLP Leachate	18.0	u	UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
-005	B0TK47	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	208		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.7		UG/L	6.0	10.0
		Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
		Lead, TCLP Leachate	32.6		UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
-006	B0TK51	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	807		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	179		UG/L	4.0	10.0
		Chromium, TCLP Leachate	149		UG/L	6.0	10.0
		Mercury, TCLP Leachate	2720		UG/L	100	1000
		Lead, TCLP Leachate	62.9		UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0

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INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/25/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	99L0179-MB1	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	1.6		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Lead, TCLP Leachate	33.7		UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
BLANK2	99L0179-MB2	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	103		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Lead, TCLP Leachate	28.5		UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
BLANK3	99L0179-MB3	Silver, TCLP Leachate	9.0	u	UG/L	9.0	10.0
		Arsenic, TCLP Leachate	33.0	u	UG/L	33.0	10.0
		Barium, TCLP Leachate	10.7		UG/L	1.0	10.0
		Cadmium, TCLP Leachate	4.0	u	UG/L	4.0	10.0
		Chromium, TCLP Leachate	6.0	u	UG/L	6.0	10.0
		Lead, TCLP Leachate	18.0	u	UG/L	18.0	10.0
		Selenium, TCLP Leachate	36.0	u	UG/L	36.0	10.0
BLANK1	99C0087-MB1	Mercury, Total	0.10	u	UG/L	0.10	1.0
BLANK2	99C0087-MB2	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0
BLANK3	99C0087-MB3	Mercury, TCLP Leachate	0.10	u	UG/L	0.10	1.0

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INORGANICS ACCURACY REPORT 03/25/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	B0TK48	Silver, TCLP Leachate	5060	9.0 u	5000	101.2	10.0
		Arsenic, TCLP Leachate	5430	33.0 u	5000	108.7	10.0
		Barium, TCLP Leachate	90100	593	100000	89.5	10.0
		Cadmium, TCLP Leachate	1030	4.0 u	1000	103.2	10.0
		Chromium, TCLP Leachat	5390	282	5000	102.2	10.0
		Mercury, TCLP Leachate	179	0.10u	200	89.5	50.0
		Lead, TCLP Leachate	5250	18.0 u	5000	105.0	10.0
		Selenium, TCLP Leachat	1090	36.0 u	1000	109.4	10.0

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INORGANICS PRECISION REPORT 03/25/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	B0TK48	Silver, TCLP Leachate	9.0 u	9.0 u	NC	10.0
		Arsenic, TCLP Leachate	33.0 u	33.0 u	NC	10.0
		Barium, TCLP Leachate	593	605	2.0	10.0
		Cadmium, TCLP Leachate	4.0 u	4.0 u	NC	10.0
		Chromium, TCLP Leachate	282	287	1.5	10.0
		Mercury, TCLP Leachate	0.10u	0.10u	NC	1.0
		Lead, TCLP Leachate	18.0 u	18.0 u	NC	10.0
		Selenium, TCLP Leachate	36.0 u	36.0 u	NC	10.0

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INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/25/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	99L0179-LC1	Silver, LCS	510	500	UG/L	102.1
		Arsenic, LCS	10300	10000	UG/L	103.3
		Barium, LCS	5030	5000	UG/L	100.5
		Cadmium, LCS	251	250	UG/L	100.3
		Chromium, LCS	504	500	UG/L	100.7
		Lead, LCS	2560	2500	UG/L	102.6
		Selenium, LCS	10500	10000	UG/L	105.4
LCS1	99C0087-LC1	Mercury, LCS	5.1	5.0	UG/L	101.9

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-038

DATE RECEIVED: 03/19/99 RFW LOT # :9903L492

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TK48						
TCLP	001	SO	99LTO028	03/08/99	03/22/99	03/23/99
B0TK47						
TCLP	002	SO	99LTO028	03/09/99	03/22/99	03/23/99
B0TK51						
TCLP	003	SO	99LTO028	03/09/99	03/22/99	03/23/99
B0TK48						
SILVER, TCLP LEACHAT	004	W	99L0179	03/23/99	03/24/99	03/25/99
SILVER, TCLP LEACHAT	004 REP	W	99L0179	03/23/99	03/24/99	03/25/99
SILVER, TCLP LEACHAT	004 MS	W	99L0179	03/23/99	03/24/99	03/25/99
ARSENIC, TCLP LEACHA	004	W	99L0179	03/23/99	03/24/99	03/25/99
ARSENIC, TCLP LEACHA	004 REP	W	99L0179	03/23/99	03/24/99	03/25/99
ARSENIC, TCLP LEACHA	004 MS	W	99L0179	03/23/99	03/24/99	03/25/99
BARIUM, TCLP LEACHAT	004	W	99L0179	03/23/99	03/24/99	03/25/99
BARIUM, TCLP LEACHAT	004 REP	W	99L0179	03/23/99	03/24/99	03/25/99
BARIUM, TCLP LEACHAT	004 MS	W	99L0179	03/23/99	03/24/99	03/25/99
CADMIUM, TCLP LEACHA	004	W	99L0179	03/23/99	03/24/99	03/25/99
CADMIUM, TCLP LEACHA	004 REP	W	99L0179	03/23/99	03/24/99	03/25/99
CADMIUM, TCLP LEACHA	004 MS	W	99L0179	03/23/99	03/24/99	03/25/99
CHROMIUM, TCLP LEACH	004	W	99L0179	03/23/99	03/24/99	03/25/99
CHROMIUM, TCLP LEACH	004 REP	W	99L0179	03/23/99	03/24/99	03/25/99
CHROMIUM, TCLP LEACH	004 MS	W	99L0179	03/23/99	03/24/99	03/25/99
MERCURY, TCLP LEACHA	004	W	99C0087	03/23/99	03/23/99	03/24/99
MERCURY, TCLP LEACHA	004 REP	W	99C0087	03/23/99	03/23/99	03/24/99
MERCURY, TCLP LEACHA	004 MS	W	99C0087	03/23/99	03/23/99	03/24/99
LEAD, TCLP LEACHATE	004	W	99L0179	03/23/99	03/24/99	03/25/99
LEAD, TCLP LEACHATE	004 REP	W	99L0179	03/23/99	03/24/99	03/25/99
LEAD, TCLP LEACHATE	004 MS	W	99L0179	03/23/99	03/24/99	03/25/99
SELENIUM, TCLP LEACH	004	W	99L0179	03/23/99	03/24/99	03/25/99
SELENIUM, TCLP LEACH	004 REP	W	99L0179	03/23/99	03/24/99	03/25/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-038

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CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TCLP LEACH	004 MS	W	99L0179	03/23/99	03/24/99	03/25/99
B0TK47						
SILVER, TCLP LEACHAT	005	W	99L0179	03/23/99	03/24/99	03/25/99
ARSENIC, TCLP LEACHA	005	W	99L0179	03/23/99	03/24/99	03/25/99
BARIUM, TCLP LEACHAT	005	W	99L0179	03/23/99	03/24/99	03/25/99
CADMIUM, TCLP LEACHA	005	W	99L0179	03/23/99	03/24/99	03/25/99
CHROMIUM, TCLP LEACH	005	W	99L0179	03/23/99	03/24/99	03/25/99
MERCURY, TCLP LEACHA	005	W	99C0087	03/23/99	03/23/99	03/24/99
LEAD, TCLP LEACHATE	005	W	99L0179	03/23/99	03/24/99	03/25/99
SELENIUM, TCLP LEACH	005	W	99L0179	03/23/99	03/24/99	03/25/99
B0TK51						
SILVER, TCLP LEACHAT	006	W	99L0179	03/23/99	03/24/99	03/25/99
ARSENIC, TCLP LEACHA	006	W	99L0179	03/23/99	03/24/99	03/25/99
BARIUM, TCLP LEACHAT	006	W	99L0179	03/23/99	03/24/99	03/25/99
CADMIUM, TCLP LEACHA	006	W	99L0179	03/23/99	03/24/99	03/25/99
CHROMIUM, TCLP LEACH	006	W	99L0179	03/23/99	03/24/99	03/25/99
MERCURY, TCLP LEACHA	006	W	99C0087	03/23/99	03/23/99	03/24/99
LEAD, TCLP LEACHATE	006	W	99L0179	03/23/99	03/24/99	03/25/99
SELENIUM, TCLP LEACH	006	W	99L0179	03/23/99	03/24/99	03/25/99

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L0179	N/A	03/24/99	03/25/99
SILVER, TCLP LEACHAT	MB1	W	99L0179	N/A	03/24/99	03/25/99
SILVER, TCLP LEACHAT	MB2	W	99L0179	N/A	03/24/99	03/25/99
SILVER, TCLP LEACHAT	MB3	W	99L0179	N/A	03/24/99	03/25/99
ARSENIC LABORATORY	LC1 BS	W	99L0179	N/A	03/24/99	03/25/99
ARSENIC, TCLP LEACHA	MB1	W	99L0179	N/A	03/24/99	03/25/99
ARSENIC, TCLP LEACHA	MB2	W	99L0179	N/A	03/24/99	03/25/99
ARSENIC, TCLP LEACHA	MB3	W	99L0179	N/A	03/24/99	03/25/99
BARIUM LABORATORY	LC1 BS	W	99L0179	N/A	03/24/99	03/25/99
BARIUM, TCLP LEACHAT	MB1	W	99L0179	N/A	03/24/99	03/25/99
BARIUM, TCLP LEACHAT	MB2	W	99L0179	N/A	03/24/99	03/25/99
BARIUM, TCLP LEACHAT	MB3	W	99L0179	N/A	03/24/99	03/25/99

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INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-038

DATE RECEIVED: 03/19/99 RFW LOT # :9903L492

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CADMIUM LABORATORY	LC1 BS	W	99L0179	N/A	03/24/99	03/25/99
CADMIUM, TCLP LEACHA	MB1	W	99L0179	N/A	03/24/99	03/25/99
CADMIUM, TCLP LEACHA	MB2	W	99L0179	N/A	03/24/99	03/25/99
CADMIUM, TCLP LEACHA	MB3	W	99L0179	N/A	03/24/99	03/25/99
CHROMIUM LABORATORY	LC1 BS	W	99L0179	N/A	03/24/99	03/25/99
CHROMIUM, TCLP LEACH	MB1	W	99L0179	N/A	03/24/99	03/25/99
CHROMIUM, TCLP LEACH	MB2	W	99L0179	N/A	03/24/99	03/25/99
CHROMIUM, TCLP LEACH	MB3	W	99L0179	N/A	03/24/99	03/25/99
MERCURY LABORATORY	LC1 BS	W	99C0087	N/A	03/23/99	03/24/99
MERCURY, TOTAL	MB1	W	99C0087	N/A	03/23/99	03/24/99
MERCURY, TCLP LEACHA	MB2	W	99C0087	N/A	03/23/99	03/24/99
MERCURY, TCLP LEACHA	MB3	W	99C0087	N/A	03/23/99	03/24/99
LEAD LABORATORY	LC1 BS	W	99L0179	N/A	03/24/99	03/25/99
LEAD, TCLP LEACHATE	MB1	W	99L0179	N/A	03/24/99	03/25/99
LEAD, TCLP LEACHATE	MB2	W	99L0179	N/A	03/24/99	03/25/99
LEAD, TCLP LEACHATE	MB3	W	99L0179	N/A	03/24/99	03/25/99
SELENIUM LABORATORY	LC1 BS	W	99L0179	N/A	03/24/99	03/25/99
SELENIUM, TCLP LEACH	MB1	W	99L0179	N/A	03/24/99	03/25/99
SELENIUM, TCLP LEACH	MB2	W	99L0179	N/A	03/24/99	03/25/99
SELENIUM, TCLP LEACH	MB3	W	99L0179	N/A	03/24/99	03/25/99

RECRA LabNet Use Only: 9903L492

Custody Transfer Record/Lab Work Request

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RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-038
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 3/19/99 Date Due: 4/18/99
Account #:

Refrigerator #: 3 (Pest/PCB); 3 (Metal); 3 (CN through TCLP/SFD)
#/Type Container – Solid: 1g (Pest/PCB); 1g (CN through TCLP/SFD)
Volume – Solid: 60 (Pest/PCB); 60 (CN through TCLP/SFD); Metal: leach
Preservatives:

ANALYSES REQUESTED: ORGANIC: VOA, BNA, Pest/PCB, Herb; INORG: Metal, CN

RECRA LabNet Use Only: PCB; RCRATCLP; ICN/TO; ITCLP; ISFD IPH

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	PCB	RCRATCLP	ICN/TO	ITCLP	ISFD IPH
001	B0TK48			SO	3/8/99	1130	✓		✓	✓	✓
002	↓ 47			↓	3/9/99	0930	✓		✓	✓	✓
003	↓ 51			↓	↓	0920				✓	
004	48 tclp of 001			L	*	-		✓			
005	47 ↓ 002			↓	↓	-		✓			
006	↓ 51 ↓ 003			↓	↓	-		✓			

Special Instructions: saf # B99-038

COMPOSITE WASTE

DATE/REVISIONS:
1. Run matrix QC
2.
3.
4.
5.
6.

RECRA LabNet Use Only
Samples were: 1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 3.9 C

Relinquished by	Received by	Date	Time
Jedeel	Fowler	3/19/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: *4019645055

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-038- 29	Page 1 of

Collector Douglas L. Bowers / SJ GALE	Company Contact Thomas M. Brown	Telephone No. 509-376-1547	Project Coordinator TRENT, SJ
Price Code	Data Turnaround 45 Days		
Project Designation 202-S REDOX Miscellaneous Waste - Other Solid	Sampling Location 202-S REDOX		SAF No. B99-038
Ice Chest No. SML 587	Field Logbook No. EL-1309-3		Method of Shipment Overnight Carrier - Fed Ex
Shipped To RECRA	Offsite Property No.		Bill of Lading/Air Bill No.

Lab. Lot # 492

COA BR1S2A2U'28

POSSIBLE SAMPLE HAZARDS/REMARKS Media Unknown Special Handling and/or Storage Store sample(s) at 4 degrees Celsius.													
			Preservation	Cool 4C	None	COOL 4C							
			Type of Container	aG	aG	aG							
			No. of Container(s)	1	1	1							
			Volume	60mL	60mL	60ml							
SAMPLE ANALYSIS				PCBs - 8082	See item (1) in Special Instructions	SEE ITEM (2) SPECIAL INST.							
Sample No.	Matrix *	Sample Date	Sample Time										
BOTK48	Other Solid	3-8-99	1130	X	X								BOTK58
BOTK47	"	3-9-99	0930	X	X								BOTK57
BOTK51	"	3-9-99	0920			X							BOTK61

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By SJ GALE	Date/Time 3 18 99 1100	Received By FED EX	Date/Time
Relinquished By Fed Ex	Date/Time 3-19-99/0930	Received By [signature]	Date/Time 3/19/99/0930
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Sulfides - 9030
Total Cyanide - 9010, pH (Soil) - 9045

(2) METALS BY ICP (TCLP) - 1311/6010;
MERCURY (TCLP) - 1311/7470

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

RECRA
LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere

Recra LabNet Philadelphia
Analytical Report

Client : TNU-HANFORD B99-038
RFW# : 9903L492
SDG# : H0362
SAF# : B99-038

W.O. # : 10985-001-001-9999-00
Date Received: 03-19-99

INORGANIC CASE NARRATIVE

1. This narrative covers the analyses of 2 solid samples.

2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of Total Cyanide and Sulfide.

4. The cooler temperature was recorded on the chain-of-custody.

5. The method blanks were within method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analyses were within the 20% RPD control limit with the exception of Sulfide.

9. Results for solid samples are reported on a dry weight basis.

for Pat E

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

4-26-99
Date

njp\i03-492

208 Welsh Pool Road • Lionville, PA 19341-1333 • (610)-280-3000 • Fax (610) 280-3041

WET CHEMISTRY
METHODS GLOSSARY FOR ANALYSIS OF SOIL/SOLID SAMPLES

	ASTM	SW846	OTHER
%Ash	__ D2216-80		
%Moisture	__ D2216-80		__ ILMO4.0 (e)
%Solids			✓ ILMO4.0 (e)
%Volatile Solids	__ D2216-80		
ASTM Extraction in Water	__ D3987-81/85		
BTU	__ D240-87		
CEC		__ 9081	__ c
Corrosivity __by coupon __by pH		__ 1110 (mod) __ 9045	
Cyanide, Total		✓ 9010 B	__ ILMO4.0 (e)
Cyanide, Reactive		__ Sec 7.3	
Density			__ b
Halides, Extractable Organic			__ EPA 600/4/84-008 (mod)
Halides, Total			__ EPA 600/4/84-008 (mod)
EP-Toxicity		__ 1310A	
Flash Point		__ 1010	
Ignitability		__ 1010	
Carbon, Total Organic (by LOI)			__ c
Oil and Grease		__ 9071A	
Carbon, Total Organic		__ 9060	__ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	__ D240-87 (mod)	__ 5050	
Petroleum Hydrocarbons, Total Recoverable		__ 9071 C	__ EPA 418.1 (mod)
pH, Soil		✓ 9045B sip 4-24-79	
Sulfide, Reactive		__ Sec 7.3	
Specific Gravity	__ D1429-76C		
Sulfur, Total		__ 9056	
TCLP		__ 1311	
TCLV		__ 1311	
Synthetic Precipitation Leach		__ 1312	
Chlorine, Total		__ 9056	
Paint Filter		__ 9095	

Other: Sulfide Method: SW9030B

02

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed., (1989).

b. Standard Methods for the Examination of Water and Waste, 17 ed., (1983)

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd. Ed. (1986)

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965)

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 04/26/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B0TK48	% Solids	99.3	%	0.01	1.0
		Cyanide, Total	0.50 u	MG/KG	0.50	1.0
		pH	12.1	SOIL PH	0.01	1.0
		Sulfide	38.5	MG/KG	1.0	1.0
-002	B0TK47	% Solids	91.6	%	0.01	1.0
		Cyanide, Total	0.55 u	MG/KG	0.55	1.0
		pH	6.9	SOIL PH	0.01	1.0
		Sulfide	37.9	MG/KG	1.1	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/26/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	99LC039A-MB1	Cyanide, Total	0.50 u	MG/KG	0.50	1.0
BLANK10	99LSD016-MB1	Sulfide	1.0 u	MG/KG	1.0	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 04/26/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B0TK48	Cyanide, Total	5.4	0.50u	5.0	106.6	1.0
-002	B0TK47	Sulfide	877	37.9	961	87.3	1.0
BLANK10	99LSD016-MB1	Sulfide	9.3	1.0 u	10.0	93.0	1.0
		Sulfide MSD	9.7	1.0 u	10.0	97.0	1.0

Recra LabNet - Lionville

INORGANICS DUPLICATE SPIKE REPORT 04/26/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
LCS20	99LC039A-LC2	Cyanide, Total LCS	104.0	101.4	2.5
BLANK10	99LSD016-MB1	Sulfide	93.0	97.0	4.2

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 04/26/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B0TK48	Cyanide, Total	0.50u	0.50u	NC	1.0
		pH	12.1	12.1	0.2	1.0
-002REP	B0TK47	pH	6.9	6.9	0.3	1.0
		Sulfide	37.9	30.0	23.3	1.0

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/26/99

CLIENT: TNU-HANFORD B99-038 RECRA LOT #: 9903L492

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS10	99LC039A-LC1	Cyanide, Total LCS	2.1	2.0	MG/KG	104.0
LCS20	99LC039A-LC2	Cyanide, Total LCS	10	10	MG/KG	101.4

Recra LabNet - Lionville Laboratory
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-038

DATE RECEIVED: 03/19/99 RFW LOT # :9903L492

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TK48						
% SOLIDS	001	SO	99L%S045	03/08/99	03/29/99	03/30/99
TOTAL CYANIDE	001	SO	99LC039A	03/08/99	03/25/99	03/26/99
TOTAL CYANIDE	001 REP	SO	99LC039A	03/08/99	03/25/99	03/26/99
TOTAL CYANIDE	001 MS	SO	99LC039A	03/08/99	03/25/99	03/26/99
PH	001	SO	99LPH031	03/08/99	03/24/99	03/24/99
PH	001 REP	SO	99LPH031	03/08/99	03/24/99	03/24/99
SULFIDE	001	SO	99LSD016	03/08/99	03/24/99	03/24/99
TCLP	001	SO	99LTO028	03/08/99	03/22/99	03/23/99
B0TK47						
% SOLIDS	002	SO	99L%S045	03/09/99	03/29/99	03/30/99
TOTAL CYANIDE	002	SO	99LC039A	03/09/99	03/25/99	03/26/99
PH	002	SO	99LPH029	03/09/99	03/22/99	03/22/99
PH	002 REP	SO	99LPH029	03/09/99	03/22/99	03/22/99
SULFIDE	002	SO	99LSD016	03/09/99	03/24/99	03/24/99
SULFIDE	002 REP	SO	99LSD016	03/09/99	03/24/99	03/24/99
SULFIDE	002 MS	SO	99LSD016	03/09/99	03/24/99	03/24/99
TCLP	002	SO	99LTO028	03/09/99	03/22/99	03/23/99
B0TK51						
TCLP	003	SO	99LTO028	03/09/99	03/22/99	03/23/99

LAB QC:

TOTAL CYANIDE	LC1 L	S	99LC039A	N/A	03/25/99	03/26/99
TOTAL CYANIDE	LC2 L	S	99LC039A	N/A	03/25/99	03/26/99
TOTAL CYANIDE	MB1	S	99LC039A	N/A	03/25/99	03/26/99
SULFIDE	MB1	S	99LSD016	N/A	03/24/99	03/24/99
SULFIDE	MB1 BS	S	99LSD016	N/A	03/24/99	03/24/99
SULFIDE	MB1 BSD	S	99LSD016	N/A	03/24/99	03/24/99

RECRA LabNet Use Only: 99032492

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU-Hanford B99-038
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 3/19/99 Date Due: 4/18/99
Account #:

	VOA	BNA	Pest/PCB	Herb				Metal	CN			
Refrigerator #			3					3	3 →			
#/Type Container – Liquid												
#/Type Container – Solid			1g						1g →			
Volume – Liquid								leach				
Volume – Solid			60						60 →			
Preservatives												
ANALYSES REQUESTED	ORGANIC							INORG				

RECRA LabNet Use Only

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	OPCB	RCRATCH	ICNTO	ITCLP	ISFD IPH
001	B0TK48			SO	3/8/99	1130	✓		✓	✓	✓
002	↓ 47			↓	3/9/99	0930	✓		✓	✓	✓
003	↓ 51			↓	↓	0920				✓	
004	48 tclp of 001			L	*	-		✓			
005	47 ↓ 002			↓	↓	-		✓			
006	↓ 51 ↓ 003			↓	↓	-		✓			

Special Instructions:
saf # B99-038

COMPOSITE WASTE

DATE/REVISIONS:
1. Run matrix QC
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
Jedel	Fowler	3/19/99	0930

Relinquished by	Received by	Date	Time

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: *4019445055

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 3.9 C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-038-29	Page 1 of 1

Collector Douglas L. Bowers / SJ GALE	Company Contact Thomas M. Brown	Telephone No. 509-376-1547	Project Coordinator TRENT, SJ	Price Code
Project Designation 202-S REDOX Miscellaneous Waste - Other Solid	Sampling Location 202-S REDOX		SAF No. B99-038	Data Turnaround **45 Days**
Ice Chest No. SML 587	Field Logbook No. EL-1309-3		Method of Shipment Overnight Carrier - Fed Ex	
Shipped To RECRA	Offsite Property No.		Bill of Lading/Air Bill No.	
Lab. Lot # 492			COA BR1SZA2U'28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store sample(s) at 4 degrees Celsius.

Preservation	Cool 4C	None	COOL 4C
Type of Container	aG	aG	aG
No. of Container(s)	1	1	1
Volume	60mL	60mL	60ml
SAMPLE ANALYSIS	PCBs - 8082	See item (1) in Special Instructions	SEE ITEM (2) SPECIAL INST.

Sample No.	Matrix *	Sample Date	Sample Time	PCBs - 8082	See item (1)	See item (2)		
BOTK48	Other Solid	3-8-99	1130	X	X		BOT	K58
BOTK47	"	3-9-99	0930	X	X		BOT	K57
BOTK51	"	3-9-99	0920			X	BOT	K61

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By	Date/Time	Received By	Date/Time
SJ GALE [signature]	3/8/99 1100	FED EX	
Fed Ex	3/9/99/0930	[signature]	3/9/99/0930

SPECIAL INSTRUCTIONS

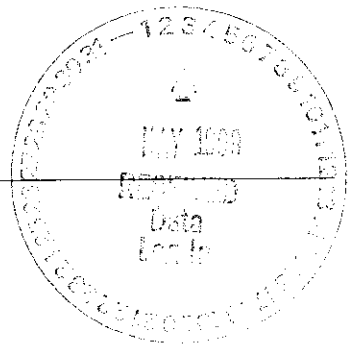
(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470; Sulfides - 9030; Total Cyanide - 9010; pH (Soil) - 9045

(2) METALS BY ICP (TCLP) - 1311/6010; MERCURY (TCLP) - 1311/7470

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

RECRA LabNet
a division of Recra Environmental, Inc.
Virtual Laboratories Everywhere



Recra LabNet Philadelphia
Analytical Report

Client: TNU-HANFORD B98-038
RFW#: 9903L492
SDG/SAF#: H0362/B98-038

W.O.#: 10985-001-001-9999-00
Date Received: 03-19-99

PCB

The set of samples consisted of two (2) solid samples collected on 03-08-99.

The samples and their associated QC samples were extracted on 03-22-99 and analyzed based on SW846, 3rd Edition on 03-25-99. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8082 for Aroclors only.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature has been recorded on the chain-of-custody.

2. All required holding times for extraction and analysis have been met.

3. The samples and their associated QC samples received a sulfuric acid and sulfur cleanup.

4. The method blank was below the reporting limits for all target compounds.

5. Five (5) of ten (10) obtainable surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

6. The blank spike recovery was within acceptance criteria.

7. All matrix spike recoveries were within acceptance criteria.

8. All initial calibrations associated with this data set were within acceptance criteria.

9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

10. Sample BOTK47 had a final volume of 60 mLs, due to the matrix spike of the sample. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

BJ
?

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

04-08-97
Date

pef\r:\group\data\pcb\03L-492.pcb

GLOSSARY OF PESTICIDE/PCB DATA

DATA QUALIFIERS

U = Indicates that the compound was analyzed for but not detected. The minimum detection limit for the sample (not the method detection limit) is reported with the U (e.g., 10U).

J = Indicates an estimated value. This flag is used in cases where a target analyte is detected at a level less than the lower quantification level. If the limit of quantification is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.

B = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination.

E = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.

I = Interference.

ABBREVIATIONS

BS = Indicates blank spike in which reagent grade water is spiked with the CLP matrix spiking solutions and carried through all the steps in the method. Spike recoveries are reported.

BSD = Indicates blank spike duplicate.

MS = Indicates matrix spike.

MSD = Indicates matrix spike duplicate.

DL = Indicates that recoveries were not obtained because the extract had to be diluted for analysis.

NA = Not Applicable.

DF = Dilution Factor.

NR = Not Required.

SP = Indicates Spiked Compound.

GLOSSARY OF PESTICIDE/PCB DATA

P = This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns (see Form X). The lower of the two values is reported on Form I and flagged with a "P".

D = This flag identifies all compounds identified in an analysis at a secondary dilution factor.

C = This flag applies to a compound that has been confirmed by GC/MS.

Recra LabNet Philadelphia **Sample Discrepancy Report (SDR)** SDR #: 99EX024

Initiator: Bernard Foley | RFW Batch: 9903L492 | Parameter: PCB
Date: 4/1/99 | Samples: 2 | Matrix: S
Client: INU-Hanford | Method: SW846/MCAWW/CLP/ | Prep Batch: 99E0345

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

Elevated final Volume = 60 mls

2. Known or Probable Causes(s)

matrix effect

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: [signature]

✓ Concur with Proposed Action
✓ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 4/1/99 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
3	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: C. Stefanosky	__	__ Inorganic: Perrone
1	X Project Mgr: Charlotte Wesson	2	X GC/LC: Rycklak/Schnell/Kay
__	X Section Mgr: Siery/Wesson/Daniels	__	__ MS: LeMin/Taylor/Kasdras
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

L-WI-006/E-08/98

Recra LabNet Philadelphia Sample Discrepancy Report (SDR) SDR #: 99660852

Initiator: G. Large
Date: 4-1-99
Client: TNU Hanford

RFW Batch: 9903L497 / 9903L492
Samples: all
Method: SW846/MCAWW/CLP/

Parameter: OPCB
Matrix: Soil
Prep Batch: 99LE0345

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. QC Problem (Include all relevant specific results; attach data if necessary)

BS and 492-001 MSD have surrogate above criteria.
TCX recoveries were 128% & 120%, limit are 28-118%
DCB recoveries were 133% & 134% limit are 38-122%.
All spikes were within criteria, and surrogate criteria was met for all other samples. 497's MS & MSD were within.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description: Report & note in narrative.

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

4. Project Manager Instructions...signature/date: [signature] 4/1/99

V Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 4/1/99 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Doughty
__	X Lab Manager: J. Michael Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: OS	__	__ GC/LC: Rycklak/Schnell
__	X Section Mgr: Siery/Durke/Daniels	__	__ MS: LeMin/McIntyre/Taylor/Kasdras
__	X QA (file): Racioppi	__	__ Log-in: Toder
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Schnell/Doughty/Kauffman	__	__ Other: _____

Recra LabNet - Lionville Laboratory

PCBs by GC

Report Date: 04/08/99 15:30

RFW Batch Number: **9903L492** Client: **TNU-HANFORD B99-038** Work Order: 10985001001 Page: 1

	Cust ID:	B0TK48	B0TK48	B0TK48	B0TK47	PBLKGB	PBLKGB BS
Sample Information	RFW#:	001	001 MS	001 MSD	002	99LE0345-MB1	99LE0345-MB1
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	80 %	110 %	120 * %	D %	102 %	128 * %
	Decachlorobiphenyl	109 %	128 * %	134 * %	D %	108 %	133 * %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		34 U	67 U	67 U	660 U	33 U	33 U
Aroclor-1221		67 U	130 U	130 U	1300 U	67 U	67 U
Aroclor-1232		34 U	67 U	67 U	660 U	33 U	33 U
Aroclor-1242		34 U	67 U	67 U	660 U	33 U	33 U
Aroclor-1248		34 U	67 U	67 U	660 U	33 U	33 U
Aroclor-1254		34 U	91 %	92 %	660 U	33 U	84 %
Aroclor-1260		34 U	67 U	67 U	660 U	33 U	33 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

Recra LabNet - Lionville Laboratory
PCB ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-038

DATE RECEIVED: 03/19/99 RFW LOT # :9903L492

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B0TK48	001	SO	99LE0345	03/08/99	03/22/99	03/25/99
B0TK48	001 MS	SO	99LE0345	03/08/99	03/22/99	03/25/99
B0TK48	001 MSD	SO	99LE0345	03/08/99	03/22/99	03/25/99
B0TK47	002	SO	99LE0345	03/09/99	03/22/99	03/25/99
LAB QC:						
PBLKGB	MB1	S	99LE0345	N/A	03/22/99	03/25/99
PBLKGB	MB1 BS	S	99LE0345	N/A	03/22/99	03/25/99

RECRA LabNet Use Only
9903L492

Custody Transfer Record/Lab Work Request

RECRA LabNet

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

009

Client: TNU-Hanford B99-038
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: Spec Del: Std TAT: 30 day
Date Rec'd: 3/19/99 Date Due: 4/18/99
Account #:

Refrigerator #				3					3	3 ——→						
#/Type Container	Liquid															
	Solid			1g						1g ——→						
Volume	Liquid								[illegible]							
	Solid			60						60 ——→						
Preservatives																
ANALYSES REQUESTED →		ORGANIC: VOA	BNA	Pest/PCB	Herb				INORG: Metal	CN						

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

RECRA LabNet Use Only

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected			OPCB					RCRATCLP	ICNTO	ITCLP	ISFD IPH				
001	B0TK48			SO	3/8/99	1130			✓						✓	✓	✓				
002	↓ 47			↓	3/9/99	0930			✓						✓	✓	✓				
003	↓ 51			↓	↓	0920										✓					
004	↓ 48 tclp of 001			L	*	-								✓							
005	↓ 47 ↓ 002			↓	↓	-								✓							
006	↓ 51 ↓ 003			↓	↓	-								✓							

Special Instructions:
saf # B99-038

COMPOSITE WASTE

DATE/REVISIONS:
1. Run matrix QC
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Dedul	Yoder	3/19/99	0930				

ORIGINAL REWRITTEN

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:
*4019645055

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered
Airbill # *
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp 3.9 C

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-038-29	Page 1 of 1

Collector Douglas L. Bowers /SJ GALE	**Company Contact** Thomas M. Brown	**Telephone No.** 509-376-1547	**Project Coordinator** TRENT, SJ	**Price Code**
Project Designation 202-S REDOX Miscellaneous Waste - Other Solid	**Sampling Location** 202-S REDOX		**SAF No.** B99-038	**Data Turnaround** 45 Days 10
Ice Chest No. SML 587	**Field Logbook No.** EL-1309-3		**Method of Shipment** Overnight Carrier - Fed Ex	
Shipped To RECRA	**Offsite Property No.**		**Bill of Lading/Air Bill No.**	
Lab. Lot # 492			COA BR1SZA2W'28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
Store sample(s) at 4 degrees Celsius

Preservation				Cool 4C	None	COOL 4C							
Type of Container				aG	aG	aG							
No. of Container(s)				1	1	1							
Volume				60mL	60mL	60ml							
SAMPLE ANALYSIS				PCBs - 8082	See item (1) in Special Instructions	SEE ITEM (2) SPECIAL INST.							
Sample No.	Matrix *	Sample Date	Sample Time										
B0TK48	Other Solid	3-8-99	1130	X	X							B0T	K58
B0TK47	"	3-9-99	0930	X	X							B0T	K57
B0TK51	"	3-9-99	0920			X						B0T	K61

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By	Date/Time	Received By	Date/Time
SJ GALE [signature]	3 18 99 1100	FED EX	
Fed Ex	3/19/99/0930	[signature]	3/19/99/0930

SPECIAL INSTRUCTIONS

(1) Metals by ICP (TCLP) - 1311/6010; Mercury (TCLP) - 1311/7470, Sulfides - 9030, Total Cyanide - 9010; pH (Soil) - 9045

(2) METALS BY ICP (TCLP) - 1311/6010; MERCURY (TCLP) - 1311/7470

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

H0362-

Thermo Nutech
W.O. No. N9-03-098-7101

Bechtel Hanford Inc.
SDG H0362

Case Narrative

1.0 GENERAL

Bechtel Hanford Inc. Sample Delivery Group H0362 is comprised of four solid (resin) samples designated under SAF No. B99-038 with a Project Designation of: 202-S REDOX Miscellaneous Waste - Other Solid.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the TNU Sample Receipt Checklist. Gross Alpha, Gross Beta and Isotopic Uranium results were reported via fax on April 13, 1999; Isotopic Plutonium and Gamma Spec results were reported via fax on April 15, 1999; Total Strontium was reported via fax on April 13 and 15, 1999 and Technetium-99 results were transmitted to BHI via fax on May 21, 1999.

2.0 ANALYSIS NOTES

2.1 Nickel-63 Analyses

No problems were encountered during the processing of the samples.

2.2 Total Strontium Analyses

No problems were encountered during the processing of the samples.

2.3 Isotopic Plutonium Analyses

The aliquot for the analysis was reduced however this did not affect achieving the required LLD. No problems were encountered during the processing of the samples.

2.4 Gamma Scan Analyses

The aliquot for the analysis was reduced due to the sample matrix. This reduced aliquot resulted in an increase in the MDA achieve for the analyses. No problems were encountered during the processing of the samples.

2.5 Isotopic Uranium Analyses

No problems were encountered during the processing of the samples.

2.6 Americium-241 Analyses

No problems were encountered during the processing of the samples.

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

SAMPLE SUMMARY

SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B0TK47	202-S REDOX	SOLID		N903098-01	B99-038	B99-038-19	03/09/99 09:30
B0TK48	202-S REDOX	SOLID		N903098-02	B99-038	B99-038-19	03/08/99 11:30
B0TK49	202-S REDOX	SOLID		N903098-03	B99-038	B99-038-18	03/09/99 10:30
B0TK50	202-S REDOX	SOLID		N903098-04	B99-038	B99-038-18	03/09/99 10:10
Method Blank		SOLID		N903098-06	B99-038		
Method Blank		SOLID		N903098-09	B99-038		
Lab Control Sample		SOLID		N903098-05	B99-038		
Lab Control Sample		SOLID		N903098-08	B99-038		
Duplicate (N903098-01)	202-S REDOX	SOLID		N903098-07	B99-038		03/09/99 09:30
Duplicate (N903098-01)	202-S REDOX	SOLID		N903098-10	B99-038		03/09/99 09:30

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

QC SUMMARY

SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7101	B99-038-18	B0TK49	SOLID	100.0			03/19/99	10	N903098-03	7101-003
		B0TK50	SOLID	100.0			03/19/99	10	N903098-04	7101-004
	B99-038-19	B0TK47	SOLID	100.0			03/19/99	10	N903098-01	7101-001
		B0TK48	SOLID	100.0			03/19/99	11	N903098-02	7101-002
		Method Blank	SOLID						N903098-06	7101-006
		Method Blank	SOLID						N903098-09	7101-009
		Lab Control Sample	SOLID						N903098-05	7101-005
		Lab Control Sample	SOLID						N903098-08	7101-008
		Duplicate (N903098-01)	SOLID	100.0			03/19/99	10	N903098-07	7101-007
		Duplicate (N903098-01)	SOLID				03/19/99	10	N903098-10	7101-010

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

SDG 7101
Contact L.A. Johnson

PREP BATCH SUMMARY

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
PU	SOLID	Plutonium, Isotopic in Solids	6880-010	5.0	4			1	1	1/1		
U	SOLID	Uranium, Isotopic in Soil	6880-010	5.0	4			1	1	1/1		
Beta Counting												
SR	SOLID	Total Strontium in Soil	6880-010	10.0	4			1	1	1/1		
TC	SOLID	Technetium 99 in Soil	6880-010	10.0	4			1	1	1/1		
Gas Proportional Counting												
80A	SOLID	Gross Alpha in Soil	6880-010	20.0	4			1	1	1/1		
80B	SOLID	Gross Beta in Soil	6880-010	15.0	4			1	1	1/1		
Gamma Spectroscopy												
GAM	SOLID	Gamma Scan	6880-010	15.0	4			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

WORK SUMMARY

SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUFFIX	ANALYZED	REVIEWED	BY	METHOD
B0TK47			N903098-01	7101-001	80A/80		04/12/99	05/21/99	TAH	Gross Alpha in Soil
202-S REDOX		SOLID	03/09/99	7101-001	80B/80		04/12/99	05/21/99	TAH	Gross Beta in Soil
B99-038-19	B99-038		03/19/99	7101-001	GAM		04/06/99	05/21/99	TAH	Gamma Scan
				7101-001	PU		04/13/99	05/21/99	TAH	Plutonium, Isotopic in Solids
				7101-001	SR		04/09/99	05/21/99	TAH	Total Strontium in Soil
				7101-001	TC	A1	05/19/99	05/21/99	TAH	Technetium 99 in Soil
				7101-001	U		04/07/99	05/21/99	TAH	Uranium, Isotopic in Soil
B0TK48			N903098-02	7101-002	80A/80		04/12/99	05/21/99	TAH	Gross Alpha in Soil
202-S REDOX		SOLID	03/08/99	7101-002	80B/80		04/12/99	05/21/99	TAH	Gross Beta in Soil
B99-038-19	B99-038		03/19/99	7101-002	GAM		04/14/99	05/21/99	TAH	Gamma Scan
				7101-002	PU		04/13/99	05/21/99	TAH	Plutonium, Isotopic in Solids
				7101-002	SR		04/09/99	05/21/99	TAH	Total Strontium in Soil
				7101-002	TC	A1	05/18/99	05/21/99	TAH	Technetium 99 in Soil
				7101-002	U		04/08/99	05/21/99	TAH	Uranium, Isotopic in Soil
B0TK49			N903098-03	7101-003	80A/80		04/13/99	05/21/99	TAH	Gross Alpha in Soil
202-S REDOX		SOLID	03/09/99	7101-003	80B/80		04/13/99	05/21/99	TAH	Gross Beta in Soil
B99-038-18	B99-038		03/19/99	7101-003	GAM		04/06/99	05/21/99	TAH	Gamma Scan
				7101-003	PU		04/13/99	05/21/99	TAH	Plutonium, Isotopic in Solids
				7101-003	SR		04/09/99	05/21/99	TAH	Total Strontium in Soil
				7101-003	TC	A1	05/17/99	05/21/99	TAH	Technetium 99 in Soil
				7101-003	U		04/07/99	05/21/99	TAH	Uranium, Isotopic in Soil
B0TK50			N903098-04	7101-004	80A/80		04/12/99	05/21/99	TAH	Gross Alpha in Soil
202-S REDOX		SOLID	03/09/99	7101-004	80B/80		04/12/99	05/21/99	TAH	Gross Beta in Soil
B99-038-18	B99-038		03/19/99	7101-004	GAM		04/06/99	05/21/99	TAH	Gamma Scan
				7101-004	PU		04/13/99	05/21/99	TAH	Plutonium, Isotopic in Solids
				7101-004	SR		04/09/99	05/21/99	TAH	Total Strontium in Soil
				7101-004	TC	A1	05/18/99	05/21/99	TAH	Technetium 99 in Soil
				7101-004	U		04/07/99	05/21/99	TAH	Uranium, Isotopic in Soil
Method Blank			N903098-06	7101-006	80A/80		04/12/99	05/21/99	TAH	Gross Alpha in Soil
		SOLID		7101-006	80B/80		04/12/99	05/21/99	TAH	Gross Beta in Soil
	B99-038			7101-006	GAM		04/06/99	05/21/99	TAH	Gamma Scan
				7101-006	PU		04/14/99	05/21/99	TAH	Plutonium, Isotopic in Solids
				7101-006	SR		04/09/99	05/21/99	TAH	Total Strontium in Soil
				7101-006	U		04/07/99	05/21/99	TAH	Uranium, Isotopic in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

CLIENT SAMPLE ID / LOCATION / CUSTODY	MATRIX / SAF No	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
Method Blank	SOLID B99-038	N903098-09	7101-009	TC		05/18/99	05/21/99	TAH	Technetium 99 in Soil
Lab Control Sample	SOLID B99-038	N903098-05	7101-005	80A/80		04/12/99	05/21/99	TAH	Gross Alpha in Soil
			7101-005	80B/80		04/12/99	05/21/99	TAH	Gross Beta in Soil
			7101-005	GAM		04/14/99	05/21/99	TAH	Gamma Scan
			7101-005	PU		04/13/99	05/21/99	TAH	Plutonium, Isotopic in Solids
			7101-005	SR		04/09/99	05/21/99	TAH	Total Strontium in Soil
			7101-005	U		04/07/99	05/21/99	TAH	Uranium, Isotopic in Soil
Lab Control Sample	SOLID B99-038	N903098-08	7101-008	TC		05/17/99	05/21/99	TAH	Technetium 99 in Soil
Duplicate (N903098-01) 202-S REDOX	SOLID B99-038	N903098-07 03/09/99 03/19/99	7101-007	80A/80		04/12/99	05/21/99	TAH	Gross Alpha in Soil
			7101-007	80B/80		04/12/99	05/21/99	TAH	Gross Beta in Soil
			7101-007	GAM		04/14/99	05/21/99	TAH	Gamma Scan
			7101-007	PU		04/13/99	05/21/99	TAH	Plutonium, Isotopic in Solids
			7101-007	SR		04/09/99	05/21/99	TAH	Total Strontium in Soil
			7101-007	U		04/07/99	05/21/99	TAH	Uranium, Isotopic in Soil
Duplicate (N903098-01) 202-S REDOX	SOLID B99-038	N903098-10 03/09/99 03/19/99	7101-010	TC		05/17/99	05/21/99	TAH	Technetium 99 in Soil

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

WORK SUMMARY, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
80A/80	B99-038	Gross Alpha in Soil	EPA900.0	4			1	1	1	7
80B/80	B99-038	Gross Beta in Soil	EPA900.0	4			1	1	1	7
GAM	B99-038	Gamma Scan	GAMMAHI	4			1	1	1	7
PU	B99-038	Plutonium, Isotopic in Solids	PUPLATE	4			1	1	1	7
SR	B99-038	Total Strontium in Soil		4			1	1	1	7
TC	B99-038	Technetium 99 in Soil	TC99TRLSC	4			1	1	1	7
U	B99-038	Uranium, Isotopic in Soil	UPLATE	4			1	1	1	7
TOTALS				28			7	7	7	49

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 05/21/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-06 Method Blank

METHOD BLANK

SDG 7101 Client/Case no Hanford SDG-H0362
Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903098-06 Client sample id Method Blank
Dept sample id 7101-006 Material/Matrix SOLID
SAF No B99-038

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.969	1.0	3.2	10	U	80A
Gross Beta	12587-47-2	-1.82	4.3	7.4	10	U	80B
Uranium 233/234	U-233/234	0.032	0.032	0.062	0.30	U	U
Uranium 235	15117-96-1	0	0.020	0.075	0.30	U	U
Uranium 238	U-238	0	0.016	0.062	0.30	U	U
Plutonium 238	13981-16-3	-0.004	0.012	0.030	0.050	U	PU
Plutonium 239/240	PU-239/240	0.042	0.020	0.022	0.050	J	PU
Total Strontium	SR-RAD	0.010	0.11	0.18	1.0	U	SR
Potassium 40	13966-00-2	U		0.10		U	GAM
Cobalt 60	10198-40-0	U		0.009	0.050	U	GAM
Cesium 137	10045-97-3	U		0.009	0.050	U	GAM
Europium 152	14683-23-9	U		0.030	0.10	U	GAM
Europium 154	15585-10-1	U		0.030	0.10	U	GAM
Europium 155	14391-16-3	U		0.020	0.10	U	GAM
Americium 241	14596-10-2	U		0.010		U	GAM
Uranium 238	U-238	U		1.0		U	GAM
Uranium 235	15117-96-1	U		0.030		U	GAM

202-S REDOX Misc. Waste-Other Solid

QC-BLANK 30389

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 05/21/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-09

Method Blank

METHOD BLANK

SDG 7101	Client/Case no Hanford	SDG-H0362	
Contact L.A. Johnson	Case no TRB-SBB-207925		
Lab sample id N903098-09	Client sample id Method Blank		
Dept sample id 7101-009	Material/Matrix	SOLID	
	SAF No B99-038		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Technetium 99	14133-76-7	-0.060	0.19	0.27	0.50	U	TC

202-S REDOX Misc. Waste-Other Solid

QC-BLANK 30708

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-05

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7101 | Client/Case no Hanford | SDG-H0362

Contact L.A. Johnson | Case no TRB-SBB-207925

Lab sample id N903098-05 | Client sample id Lab Control Sample

Dept sample id 7101-005 | Material/Matrix | SOLID

SAF No B99-038

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	193	15	4.0	10		80A	216	8.6	89	71-129	80-120
Gross Beta	244	11	5.8	10		80B	252	10	97	76-124	80-120
Uranium 233/234	4.62	0.52	0.25	0.30		U	4.95	0.20	93	82-118	80-120
Uranium 235	3.61	0.45	0.065	0.30		U	4.04	0.16	89	81-119	80-120
Uranium 238	5.04	0.55	0.23	0.30		U	5.10	0.20	99	81-119	80-120
Plutonium 238	5.47	0.50	0.028	0.050		PU	5.66	0.23	97	84-116	80-120
Plutonium 239/240	5.60	0.51	0.028	0.050	B	PU	5.95	0.24	94	84-116	80-120
Total Strontium	14.2	0.46	0.20	1.0		SR	12.6	0.50	113	81-119	
Cesium 137	0.380	0.014	0.008	0.050		GAM	0.381	0.015	100	76-124	80-120

202-S REDOX Misc. Waste-Other Solid

QC-LCS 30388

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-08

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7101 Client/Case no Hanford SDG-H0362

Contact L.A. Johnson Case no TRB-SBB-207925

Lab sample id N903098-08 Client sample id Lab Control Sample

Dept sample id 7101-008 Material/Matrix SOLID

SAF No B99-038

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Technetium 99	34.1	1.0	0.30	0.50		TC	38.2	1.5	89	85-115	80-120

202-S REDOX Misc. Waste-Other Solid

QC-LCS 30707

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-07

B0TK47

DUPLICATE

SDG 7101 | Client/Case no Hanford | SDG-H0362

Contact L.A. Johnson | Case no TRB-SBB-207925

DUPLICATE		ORIGINAL		
Lab sample id N903098-07	Lab sample id N903098-01	Client sample id B0TK47		
Dept sample id 7101-007	Dept sample id 7101-001	Location/Matrix 202-S REDOX	SOLID	
	Received 03/19/99	Collected 03/09/99 09:30		
% solids 100.0	% solids 100.0	Custody/SAF No B99-038-19	B99-038	

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	-0.526	0.66	2.1	10	U	80A	0.098	1.1	2.4	U	-	
Gross Beta	-0.780	3.5	6.2	10	U	80B	-2.96	4.1	7.3	U	-	
Uranium 233/234	0	0.015	0.057	0.30	U	U	0.024	0.032	0.061	U	-	
Uranium 235	0	0.018	0.069	0.30	U	U	0	0.019	0.074	U	-	
Uranium 238	0.007	0.015	0.057	0.30	U	U	0.016	0.016	0.061	U	-	
Plutonium 238	0	0.020	0.047	0.050	U	PU	0.005	0.018	0.035	U	-	
Plutonium 239/240	-0.010	0.020	0.054	0.050	U	PU	0	0.018	0.043	U	-	
Total Strontium	0.051	0.11	0.19	1.0	U	SR	-0.008	0.15	0.21	U	-	
Potassium 40	U		1.0		U	GAM	U		1.6	U	-	
Cobalt 60	U		0.10	0.050	U	GAM	U		0.11	U	-	
Cesium 137	U		0.090	0.050	U	GAM	U		0.089	U	-	
Europium 152	U		0.30	0.10	U	GAM	U		0.23	U	-	
Europium 154	U		0.30	0.10	U	GAM	U		0.27	U	-	
Europium 155	U		0.20	0.10	U	GAM	U		0.22	U	-	
Radium 226	U			0.10	J	GAM	U		0.23	U	0	212
Americium 241	U		0.090		U	GAM	U		0.22	U	-	
Uranium 238	U		10		U	GAM	U		11	U	-	
Uranium 235	U		0.30		U	GAM	U		0.34	U	-	

202-S REDOX Misc. Waste-Other Solid

QC-DUP#1 30390

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-10

B0TK47

DUPLICATE

SDG	7101			Client/Case no	Hanford SDG-H0362
Contact	L.A. Johnson			Case no	TRB-SBB-207925
	DUPLICATE		ORIGINAL		
Lab sample id	N903098-10	Lab sample id	N903098-01	Client sample id	B0TK47
Dept sample id	7101-010	Dept sample id	7101-001	Location/Matrix	202-S REDOX SOLID
		Received	03/19/99	Collected	03/09/99 09:30
		% solids	100.0	Custody/SAF No	B99-038-19 B99-038

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Technetium 99	-0.109	0.70	1.3	0.50	U	TC	0.065	0.24	0.65	U	-	

202-S REDOX Misc. Waste-Other Solid

QC-DUP#1 30709

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 05/21/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-01 B0TK47

DATA SHEET

SDG	7101	Client/Case no	Hanford SDG-H0362
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903098-01	Client sample id	B0TK47
Dept sample id	7101-001	Location/Matrix	202-S REDOX SOLID
Received	03/19/99	Collected	03/09/99 09:30
% solids	100.0	Custody/SAF No	B99-038-19 B99-038

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.098	1.1	2.4	10	U	80A
Gross Beta	12587-47-2	-2.96	4.1	7.3	10	U	80B
Technetium 99	14133-76-7	0.065	0.24	0.65	0.50	U	TC
Uranium 233/234	U-233/234	0.024	0.032	0.061	0.30	U	U
Uranium 235	15117-96-1	0	0.019	0.074	0.30	U	U
Uranium 238	U-238	0.016	0.016	0.061	0.30	U	U
Plutonium 238	13981-16-3	0.005	0.018	0.035	0.050	U	PU
Plutonium 239/240	PU-239/240	0	0.018	0.043	0.050	U	PU
Total Strontium	SR-RAD	-0.008	0.15	0.21	1.0	U	SR
Potassium 40	13966-00-2	U		1.6		U	GAM
Cobalt 60	10198-40-0	U		0.11	0.050	U	GAM
Cesium 137	10045-97-3	U		0.089	0.050	U	GAM
Europium 152	14683-23-9	U		0.23	0.10	U	GAM
Europium 154	15585-10-1	U		0.27	0.10	U	GAM
Europium 155	14391-16-3	U		0.22	0.10	U	GAM
Radium 226	13982-63-3	U		0.23	0.10	U	GAM
Americium 241	14596-10-2	U		0.22		U	GAM
Uranium 238	U-238	U		11		U	GAM
Uranium 235	15117-96-1	U		0.34		U	GAM

202-S REDOX Misc. Waste-Other Solid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/21/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-02 B0TK48

DATA SHEET

SDG 7101	Client/Case no Hanford	SDG-H0362	
Contact L.A. Johnson	Case no TRB-SBB-207925		
Lab sample id N903098-02	Client sample id B0TK48		
Dept sample id 7101-002	Location/Matrix 202-S REDOX	SOLID	
Received 03/19/99	Collected 03/08/99 11:30		
% solids 100.0	Custody/SAF No B99-038-19	B99-038	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	5.80	4.0	5.0	10	J	80A
Gross Beta	12587-47-2	6.32	4.3	6.7	10	U	80B
Technetium 99	14133-76-7	0.182	0.17	0.46	0.50	U	TC
Uranium 233/234	U-233/234	0.443	0.093	0.034	0.30		U
Uranium 235	15117-96-1	0	0.011	0.041	0.30	U	U
Uranium 238	U-238	0.408	0.092	0.034	0.30		U
Plutonium 238	13981-16-3	-0.005	0.009	0.035	0.050	U	PU
Plutonium 239/240	PU-239/240	0	0.009	0.035	0.050	U	PU
Total Strontium	SR-RAD	-0.011	0.10	0.18	1.0	U	SR
Potassium 40	13966-00-2	4.00	1.2	0.83			GAM
Cobalt 60	10198-40-0	U		0.071	0.050	U	GAM
Cesium 137	10045-97-3	U		0.063	0.050	U	GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.20	0.10	U	GAM
Europium 155	14391-16-3	U		0.094	0.10	U	GAM
Radium 226	13982-63-3	0.311	0.11	0.12	0.10		GAM
Thorium 228	14274-82-9	0.461	0.087	0.087			GAM
Americium 241	14596-10-2	U		0.049		U	GAM
Uranium 238	U-238	U		7.0		U	GAM
Uranium 235	15117-96-1	U		0.15		U	GAM

202-S REDOX Misc. Waste-Other Solid

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 05/21/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-03 B0TK49

DATA SHEET

SDG	7101	Client/Case no	Hanford SDG-H0362
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903098-03	Client sample id	B0TK49
Dept sample id	7101-003	Location/Matrix	202-S REDOX SOLID
Received	03/19/99	Collected	03/09/99 10:30
% solids	100.0	Custody/SAF No	B99-038-18 B99-038

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.305	1.1	2.6	10	U	80A
Gross Beta	12587-47-2	-0.692	3.3	5.8	10	U	80B
Technetium 99	14133-76-7	0.031	0.11	0.31	0.50	U	TC
Uranium 233/234	U-233/234	0.030	0.030	0.057	0.30	U	U
Uranium 235	15117-96-1	0	0.018	0.069	0.30	U	U
Uranium 238	U-238	0.007	0.015	0.057	0.30	U	U
Plutonium 238	13981-16-3	-0.004	0.009	0.034	0.050	U	PU
Plutonium 239/240	PU-239/240	-0.004	0.009	0.034	0.050	U	PU
Total Strontium	SR-RAD	-0.042	0.11	0.19	1.0	U	SR
Potassium 40	13966-00-2	U		1.3		U	GAM
Cobalt 60	10198-40-0	U		0.086	0.050	U	GAM
Cesium 137	10045-97-3	0.111	0.075	0.092	0.050		GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.26	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Americium 241	14596-10-2	U		0.17		U	GAM
Uranium 238	U-238	U		9.9		U	GAM
Uranium 235	15117-96-1	U		0.25		U	GAM

202-S REDOX Misc. Waste-Other Solid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/21/99

TMA / RICHMOND

SAMPLE DELIVERY GROUP H0362

N903098-04 B0TK50

DATA SHEET

SDG	7101	Client/Case no	Hanford SDG-H0362
Contact	L.A. Johnson	Case no	TRB-SBB-207925
Lab sample id	N903098-04	Client sample id	B0TK50
Dept sample id	7101-004	Location/Matrix	202-S REDOX SOLID
Received	03/19/99	Collected	03/09/99 10:10
% solids	100.0	Custody/SAF No	B99-038-18 B99-038

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	0.014	1.8	4.0	10	U	80A
Gross Beta	12587-47-2	-2.68	3.9	6.9	10	U	80B
Technetium 99	14133-76-7	0.202	0.33	0.90	0.50	U	TC
Uranium 233/234	U-233/234	0.055	0.048	0.060	0.30	U	U
Uranium 235	15117-96-1	0.010	0.019	0.073	0.30	U	U
Uranium 238	U-238	0.016	0.016	0.060	0.30	U	U
Plutonium 238	13981-16-3	-0.010	0.010	0.046	0.050	U	PU
Plutonium 239/240	PU-239/240	0.014	0.029	0.046	0.050	U	PU
Total Strontium	SR-RAD	0.084	0.12	0.19	1.0	U	SR
Potassium 40	13966-00-2	U		1.5		U	GAM
Cobalt 60	10198-40-0	U		0.16	0.050	U	GAM
Cesium 137	10045-97-3	U		0.13	0.050	U	GAM
Europium 152	14683-23-9	U		0.24	0.10	U	GAM
Europium 154	15585-10-1	U		0.43	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Americium 241	14596-10-2	U		0.085		U	GAM
Uranium 238	U-238	U		18		U	GAM
Uranium 235	15117-96-1	U		0.26		U	GAM

202-S REDOX Misc. Waste-Other Solid

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN SOLIDS

ALPHA SPECTROSCOPY

Test PU Matrix SOLID
SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238	Plutonium 239/240
Preparation batch 6880-010						
B0TK47	N903098-01			7101-001	U	U
B0TK48	N903098-02			7101-002	U	U
B0TK49	N903098-03			7101-003	U	U
B0TK50	N903098-04			7101-004	U	U
BLK (QC ID=30389)	N903098-06			7101-006	U	0.042 J
LCS (QC ID=30388)	N903098-05			7101-005	ok	ok
Duplicate (N903098-01)	N903098-07			7101-007	- U	- U
Nominal values and limits from method				RDLs (pCi/g)	0.050	0.050
202-S REDOX Misc. Waste-Other Solid						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-010 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.10																
B0TK47	N903098-01			0.043	0.500			103		529			35	04/12/99	04/13	SS-002
B0TK48	N903098-02			0.035	0.500			97		529			36	04/12/99	04/13	SS-005
B0TK49	N903098-03			0.034	0.500			99		529			35	04/12/99	04/13	SS-006
B0TK50	N903098-04			0.046	0.500			93		529			35	04/12/99	04/13	SS-007
BLK (QC ID=30389)	N903098-06			0.030	1.00			88		666				04/12/99	04/14	SS-041
LCS (QC ID=30388)	N903098-05			0.028	1.00			81		529				04/12/99	04/13	SS-001
Duplicate (N903098-01) (QC ID=30390)	N903098-07			0.054	0.500			91		524			35	04/12/99	04/13	SS-057
Nominal values and limits from method				0.050	1.00			20-105		10	100		180			

PROCEDURES	REFERENCE	PUPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-940	Plutonium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.039 ± 0.019
YIELD 93 ± 15

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

METHOD SUMMARY

URANIUM, ISOTOPIC IN SOIL

ALPHA SPECTROSCOPY

Test U Matrix SOLID
SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 6880-010											
B0TK47	N903098-01			7101-001	U	U	U				
B0TK48	N903098-02			7101-002	0.443	U	0.408	109	33	0	3
B0TK49	N903098-03			7101-003	U	U	U				
B0TK50	N903098-04			7101-004	U	U	U				
BLK (QC ID=30389)	N903098-06			7101-006	U	U	U				
LCS (QC ID=30388)	N903098-05			7101-005	ok	ok	ok				
Duplicate (N903098-01)	N903098-07			7101-007	- U	- U	- U				
Nominal values and limits from method				RDLs (pCi/g)	0.30	0.30	0.30	100		4	
202-S REDOX Misc. Waste-Other Solid								Averages 109		0	

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-010 2σ prep error 5.0 % Reference Lab Notebook 6880 pg.10																
B0TK47	N903098-01			0.074	1.00			92		159			29	04/07/99	04/07	SS-010
B0TK48	N903098-02			0.041	1.00			92		268			31	04/07/99	04/08	SS-003
B0TK49	N903098-03			0.069	1.00			102		159			29	04/07/99	04/07	SS-011
B0TK50	N903098-04			0.073	1.00			93		159			29	04/07/99	04/07	SS-012
BLK (QC ID=30389)	N903098-06			0.075	1.00			93		159				04/07/99	04/07	SS-015
LCS (QC ID=30388)	N903098-05			0.25	1.00			103		159				04/07/99	04/07	SS-013
Duplicate (N903098-01) (QC ID=30390)	N903098-07			0.069	1.00			100		159			29	04/07/99	04/07	SS-016
Nominal values and limits from method				0.30	1.00			30-105		150	100		180			

PROCEDURES	REFERENCE	UPLATE
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-910	Uranium Purification, rev 0
	EP-008	Heavy Elements Electroplating, rev 0

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.093 ± 0.14
YIELD 96 ± 10

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

METHOD SUMMARY

TOTAL STRONTIUM IN SOIL

BETA COUNTING

Test SR Matrix SOLID
SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 6880-010					
B0TK47	N903098-01			7101-001	U
B0TK48	N903098-02			7101-002	U
B0TK49	N903098-03			7101-003	U
B0TK50	N903098-04			7101-004	U
BLK (QC ID=30389)	N903098-06			7101-006	U
LCS (QC ID=30388)	N903098-05			7101-005	ok
Duplicate (N903098-01)	N903098-07			7101-007	- U
Nominal values and limits from method				RDLs (pCi/g)	1.0
202-S REDOX Misc. Waste-Other Solid					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-010 2σ prep error 10.0 % Reference Lab Notebook 6880 pg.10																
B0TK47	N903098-01			0.21	1.00			78		400			31	04/09/99	04/09	GRB-217
B0TK48	N903098-02			0.18	1.00			85		200			32	04/09/99	04/09	GRB-206
B0TK49	N903098-03			0.19	1.00			76		200			31	04/09/99	04/09	GRB-207
B0TK50	N903098-04			0.19	1.00			84		200			31	04/09/99	04/09	GRB-208
BLK (QC ID=30389)	N903098-06			0.18	1.00			77		200				04/09/99	04/09	GRB-217
LCS (QC ID=30388)	N903098-05			0.20	1.00			76		400				04/09/99	04/09	GRB-205
Duplicate (N903098-01) (QC ID=30390)	N903098-07			0.19	1.00			76		200			31	04/09/99	04/09	GRB-218
Nominal values and limits from method				1.0	1.00					100			180			

PROCEDURES RP-500 Strontium - Initial Separation, rev 0
RP-519 Strontium-89,90 Demounting and Yttrium Purification, rev 0

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.19 ± 0.021
YIELD 79 ± 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

METHOD SUMMARY

TECHNETIUM 99 IN SOIL

BETA COUNTING

Test TC Matrix SOLID
SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Technetium 99	
Preparation batch 6880-010						
B0TK47	N903098-01		A1	7101-001	U	
B0TK48	N903098-02		A1	7101-002	U	
B0TK49	N903098-03		A1	7101-003	U	
B0TK50	N903098-04		A1	7101-004	U	
BLK (QC ID=30708)	N903098-09			7101-009	U	
LCS (QC ID=30707)	N903098-08			7101-008	ok	
Duplicate (N903098-01)	N903098-10			7101-010	-	U

Nominal values and limits from method RDLs (pCi/g) 0.50
202-S REDOX Misc. Waste-Other Solid

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-010	2σ prep error 10.0 % Reference Lab Notebook 6880 pg.10															
B0TK47	N903098-01		A1	0.65	1.00			50		129			71	05/13/99	05/19	GRB-231
B0TK48	N903098-02		A1	0.46	1.00			74		101			71	05/13/99	05/18	GRB-218
B0TK49	N903098-03		A1	0.31	1.00			109		101			69	05/13/99	05/17	GRB-218
B0TK50	N903098-04		A1	0.90	1.00			37		101			70	05/13/99	05/18	GRB-220
BLK (QC ID=30708)	N903098-09			0.27	2.00			62		101				05/13/99	05/18	GRB-230
LCS (QC ID=30707)	N903098-08			0.30	2.00			56		101				05/13/99	05/17	GRB-220
Duplicate (N903098-01) (QC ID=30709)	N903098-10			1.3	1.00			27		101			69	05/13/99	05/17	GRB-218
Nominal values and limits from method				0.50	2.00			20-105		50			180			

PROCEDURES	REFERENCE	TC99TRLSC
	EP-060	Soil Preparation, rev 0
	EP-020	Sample Leach For Technetium-99, rev 0
	EP-540	Technetium-99 Purification, rev 0

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 0.60 ± 0.77
YIELD 59 ± 54

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

Test 80A Matrix SOLID
SDG 7101
Contact L.A. Johnson

METHOD SUMMARY

GROSS ALPHA IN SOIL
GAS PROPORTIONAL COUNTING

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha	
Preparation batch 6880-010						
B0TK47	N903098-01	80		7101-001	U	
B0TK48	N903098-02	80		7101-002	5.80	J
B0TK49	N903098-03	80		7101-003	U	
B0TK50	N903098-04	80		7101-004	U	
BLK (QC ID=30389)	N903098-06	80		7101-006	U	
LCS (QC ID=30388)	N903098-05	80		7101-005	ok	
Duplicate (N903098-01)	N903098-07	80		7101-007	-	U

Nominal values and limits from method RDLs (pCi/g) 10
202-S REDOX Misc. Waste-Other Solid

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-010 2σ prep error 20.0 % Reference Lab Notebook 6880 pg.10																
B0TK47	N903098-01	80		2.4	0.100			3		100			34	04/07/99	04/12	GRB-116
B0TK48	N903098-02	80		5.0	0.100			109		100			35	04/07/99	04/12	GRB-111
B0TK49	N903098-03	80		2.6	0.100			2		100			35	04/07/99	04/13	GRB-113
B0TK50	N903098-04	80		4.0	0.100			69		100			34	04/07/99	04/12	GRB-114
BLK (QC ID=30389)	N903098-06	80		3.2	0.100			32		100				04/07/99	04/12	GRB-116
LCS (QC ID=30388)	N903098-05	80		4.0	0.100			31		100				04/07/99	04/12	GRB-115
Duplicate (N903098-01) (QC ID=30390)	N903098-07	80		2.1	0.100			2		100			34	04/07/99	04/12	GRB-111
Nominal values and limits from method				10	0.100			5-150		100			180			

PROCEDURES
REFERENCE EPA900.0
EP-060 Soil Preparation, rev 0
EP-070 Soil Dissolution, rev 0
EP-170 Preparation of Solids for Gross Alpha and Gross Beta Counting, rev 1

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 3.3 ± 2.1
RESIDUE 35 ± 81

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

METHOD SUMMARY

GROSS BETA IN SOIL

GAS PROPORTIONAL COUNTING

Test 80B Matrix SOLID
SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta	
Preparation batch 6880-010						
B0TK47	N903098-01	80		7101-001	U	
B0TK48	N903098-02	80		7101-002	U	
B0TK49	N903098-03	80		7101-003	U	
B0TK50	N903098-04	80		7101-004	U	
BLK (QC ID=30389)	N903098-06	80		7101-006	U	
LCS (QC ID=30388)	N903098-05	80		7101-005	ok	
Duplicate (N903098-01)	N903098-07	80		7101-007	-	U
Nominal values and limits from method				RDLs (pCi/g)	10	
202-S REDOX Misc. Waste-Other Solid						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-010	2σ prep error 15.0 %			Reference Lab Notebook 6880 pg.10												
B0TK47	N903098-01	80		7.3	0.100			3		100			34	04/07/99	04/12	GRB-116
B0TK48	N903098-02	80		6.7	0.100			109		100			35	04/07/99	04/12	GRB-111
B0TK49	N903098-03	80		5.8	0.100			2		100			35	04/07/99	04/13	GRB-113
B0TK50	N903098-04	80		6.9	0.100			69		100			34	04/07/99	04/12	GRB-114
BLK (QC ID=30389)	N903098-06	80		7.4	0.100			32		100				04/07/99	04/12	GRB-116
LCS (QC ID=30388)	N903098-05	80		5.8	0.100			31		100				04/07/99	04/12	GRB-115
Duplicate (N903098-01) (QC ID=30390)	N903098-07	80		6.2	0.100			2		100			34	04/07/99	04/12	GRB-111
Nominal values and limits from method				10	0.100			5-150		100			180			

PROCEDURES	REFERENCE	
	EPA900.0	
	EP-060	Soil Preparation, rev 0
	EP-070	Soil Dissolution, rev 0
	EP-170	Preparation of Solids for Gross Alpha and Gross Beta Counting, rev 1

AVERAGES ± 2 SD FOR 7 SAMPLES
MDA 6.6 ± 1.3
RESIDUE 35 ± 81

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/21/99

TMA/RICHMOND

SAMPLE DELIVERY GROUP H0362

METHOD SUMMARY

GAMMA SCAN

GAMMA SPECTROSCOPY

Test GAM Matrix SOLID
SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 6880-010						
B0TK47	N903098-01			7101-001	U	U
B0TK48	N903098-02			7101-002	U	U
B0TK49	N903098-03			7101-003	U	0.111
B0TK50	N903098-04			7101-004	U	U
BLK (QC ID=30389)	N903098-06			7101-006	U	U
LCS (QC ID=30388)	N903098-05			7101-005		ok
Duplicate (N903098-01)	N903098-07			7101-007	- U	- U
Nominal values and limits from method 202-S REDOX Misc. Waste-Other Solid				RDLs (pCi/g)	0.050	0.050

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 6880-010 2σ prep error 15.0 % Reference Lab Notebook 6880 pg.10																
B0TK47	N903098-01			0.19	71.8					403			28	03/26/99	04/06	JR,03,00
B0TK48	N903098-02			0.17	138					402			37	03/26/99	04/14	JR,01,00
B0TK49	N903098-03			0.17	31.6					306			28	03/26/99	04/06	PD,04,00
B0TK50	N903098-04			0.31	35.7					428			28	03/26/99	04/06	PD,01,00
BLK (QC ID=30389)	N903098-06			0.020	750					463				03/26/99	04/06	JR,07,00
LCS (QC ID=30388)	N903098-05			0.008	750					424				03/26/99	04/14	JR,04,00
Duplicate (N903098-01) (QC ID=30390)	N903098-07			0.20	71.8					424			36	03/26/99	04/14	JR,07,00
Nominal values and limits from method				0.050	750					100			180			

PROCEDURES

REFERENCE	
GAMMAHI	
EP-060	Soil Preparation, rev 0
EP-100	Ge(Li) Preparation for Environmental Samples, rev 0

AVERAGES ± 2 SD FOR 7 SAMPLES

MDA 0.15 ± 0.21
YIELD ±

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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TMA / RICHMOND

SAMPLE DELIVERY GROUP H0362

REPORT GUIDE

SDG 7101
Contact L.A. Johnson

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
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SDG 7101
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

REPORT GUIDE

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

SDG 7101
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1÷3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

SDG 7101
Contact L.A. Johnson

GUIDE, cont.

Client Hanford
Contract TRB-SBB-207925
Case no SDG-H0362

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 05/21/99

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B99-038-18	Page 1 of 1

Collector	Company Contact / Telephone No.	Project Coordinator	Price Code	Data Turnaround
Douglas L. Bowers / SJGALE	Thomas M. Brown 509-376-1547	TRENT, SJ		45 Days
Project Designation 202-S REDOX Miscellaneous Waste - Other Solid	**Sampling Location** 202-S REDOX	**SAF No.** B99-038		
Ice Chest No. SML 264	**Field Logbook No.** EL-1309-3	**Method of Shipment** Overnight Carrier - Fed Ex		
Shipped To ~~TMA~~ THERMO NUTECH	**Offsite Property No.**	**Bill of Lading/Air Bill No.**		
		COA BR1S2A2W28		

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
None noted on SAF.

Preservation	None	None	None	COOL 4C	COOL 4C							
Type of Container	aG	aG	aG	aG	aG							
No. of Container(s)	1	1	1	1	1							
Volume	60mL	60mL	500mL	60ml	120ml							
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions	Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-154, Europium-155)	SEE ITEM (1) (2) SPECIAL INST.	SEE ITEM (1), (2) SPECIAL INST.							
Sample No.	Matrix *	Sample Date	Sample Time	✓								
✓ B0TK49	Other Solid	3-9-99	1030				X	✓				B0TK59
✓ B0TK50	"	3-9-99	1010					X				B0TK60

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
SJGALE	31899 1100	FED EX	3-19-99
Fed Ex	3-19-99 10:00	JR Corse	3-19-99 10:00

SPECIAL INSTRUCTIONS

(1) Gross Alpha; Gross Beta; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Technetium-99

(2) GAMMA SPECTROSCOPY, ACTIVITY SCAN, SEND REMAINING SAMPLE TO RECRA FOR pH, TCLP METALS, SULFIDE, CYANIDE, PCBs, VOA, SEMI-VOA

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | B99-038-19 | Page 1 of 1

Collector Douglas L. Bowers / SJ GALE	**Company Contact** Thomas M. Brown — **Telephone No.** 509-376-1547	**Project Coordinator** TRENT, SJ	**Price Code** — **Data Turnaround** 45 Days
Project Designation 202-S REDOX Miscellaneous Waste - Other Solid	**Sampling Location** 202-S REDOX	**SAF No.** B99-038	
Ice Chest No. SML 264	**Field Logbook No.** EL-1309-3	**Method of Shipment** Overnight Carrier - Fed Ex	
Shipped To ~~TMA~~ THERMO NUTECH	**Offsite Property No.**	**Bill of Lading/Air Bill No.**	
		COA BRISZA ZW28	

POSSIBLE SAMPLE HAZARDS/REMARKS
Media Unknown

Special Handling and/or Storage
None noted on SAF.

Preservation	None	None	None								
Type of Container	aG	aG	aG								
No. of Container(s)	1	1	1								
Volume	60mL	60mL	500mL								
SAMPLE ANALYSIS	Activity Scan	See item (1) in Special Instructions.	Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-154, Europium-155}								

Sample No.	Matrix *	Sample Date	Sample Time											
✓ BOTK48	Other Solid	3-8-99	1130	X	X	X							BOT	K58
✓ BOTK47	11	3-9-99	0930	X	X	X							BOT	K57
				✓	✓	✓								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By SJGALE [signature]	Date/Time 3/18/99 1100	Received By FED EX	Date/Time 3-18-99
Relinquished By Fed Ex	Date/Time 3-19-99 10:00	Received By [signature] JB Love	Date/Time 3-19-99 10:00
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

(1) Gross Alpha; Gross Beta; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Technetium-99

Matrix *
Soil
Water
Vapor
Other Solid
Other Liquid

LABORATORY SECTION	Received By	Title	Date Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date Time

HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)

Page 1 of 1

SHIPPING INST.

SHIP TO: Thermo Retech
Company: 2030 Wright Ave
Address: Richmond, CA 94804-0040
City, State, Zip
Attention: Larry Johnson 510-235-2633

Originating Facility: Building 3728, Area 300
Originator Signature: David Shafer
Date: 3/18/99
FROM: ☐ WHC ☐ KEH ☐ PNL ☑ OTHER BHI

OFFSITE ONLY: SHIP: ☒ PREPAID ☐ COLLECT
VIA: ☐ Parcel Post ☐ Air Parcel Post ☐ Freight (Rail/Truck)
☒ Air (Passenger) ☐ Air (Cargo)
Cost Code: ERCCOA BRISC2AZW2E

SHIPMENT DESCRIPTION

CONTAINERS / PACKAGING						CONTENT DESCRIPTION
Number of Containers	Type	DOT Spec	Package Dimensions	Quantity Pkg	Gross Wt Each Pkg	See 49 CFR 172.101(c) Hazardous Material Table
1	Metal can w/ lock ring inner, steel drum outer	IP3 inner, 1A2 outer	Outer package 5 gal drum, 30 cm dia 45 cm ht	2-60ml 1-500ml 620ml Total 0.65kg TOTAL	8 kg	Proper Ship Name: Flammable solid, organic, n.o.s. Hazard Class: Division 4.1, PG II UN/NA No.: UN 1325 List Secondary Hazards: None List Labels Req'd/Applied Flammable solid Div. 4.1
1	Metal can w/ lock ring inner, steel drum outer	IP3 inner, 1A2 outer	Outer package 5 gal drum, 30 cm dia 45 cm ht	3-60ml 1-120ml 1-500ml 800ml Total 0.8kg TOTAL	9 kg	Proper Ship Name: Flammable solid, organic, n.o.s. Hazard Class: Division 4.1, PG II UN/NA No.: UN 1325 List Secondary Hazards: None List Labels Req'd/Applied Flammable solid Div. 4.1
Emergency Response: 509-373-3800 ERG No. 133 Total Volume 1420 ml						Proper Ship Name: Packaged per IATA 415 and IATA State Variation USG-14 Hazard Class: UN/NA No.: Includes Sample Nos. List Secondary Hazards: BOTK48, BOTK47, List Labels Req'd/Applied BOTK50 ; BOTK49

Total No. Containers	Gross Wt of Shipment	Identify Placards Required:	Identify Property Control or Return Order No.: (if applicable)
2	17 kg	1. None 2. ____ 3. ____ 4. ____	

Material in manufacturers original container: ☐ Yes ☒ No
Container free of deterioration or damage: ☒ Yes
Container acceptability documented: ☑ Yes
Material is packaged, sealed, marked and labelled to meet DOT requirements ☒ Yes

Describe Internal Packaging: 500 ml (or smaller) glass sample jars packed in IP3 can with vermiculite cushioning and IP3 can packed in 1A2 drum with Blue ice and cushioning material.

RADIATION RELEASE	Survey No.	Date	RM Signature	Print Name
	Not Radioactive - see attached total Activity Reports			

CERTIFICATION

CONTRACTORS CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation:

This shipment is within the Limitations prescribed for: ☒ Passenger Aircraft ☐ Cargo Aircraft ☐ NA

Authorizing Signature: Ronald K. Clawson Print Name: Ronald K. Clawson Date: 3-18-99

FOR OFFSITE SHIPMENTS – ADDITIONAL APPROVAL REQUIRED

WHC TRAFFIC	B.L. No.	Date Shipped	ETA	Routing	Special Considerations
		3/18/99	3/19/99	FED-X	

WHC Traffic: Greg C. Boles WHC Shipping: ____

HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)

1 of 1

SHIPPING INST.

SHIP TO: Thermo Retech
Company: 2030 Wright Ave.
Address: Richmond CA 94804-0040
City, State, Zip: Larry Johnson 510-235-2633
Attention:

Originating Facility: Building 3728 Area 300
Originator Signature: David L Johnson
Date: 3/18/99
FROM: ☐ WHC ☒ KEH ☐ PNL ☒ OTHER ~~BHI~~
OFFSITE ONLY: SHIP: ☒ PREPAID ☐ COLLECT
VIA: ☐ Parcel Post ☐ Air Parcel Post ☐ Freight (Rail/Truck) ☐ Air (Passenger) ☐ Air (Cargo)
Cost Code: ERC-COA BRISC2A2029

SHIPMENT DESCRIPTION

CONTAINERS / PACKAGING

Number of Containers	Type	DOT Spec	Package Dimensions	Quantity Pkg	Gross Wt Each Pkg
1	metal can w/ lock ring inner, Fiber box outer	IP3 inner, 4G outer	30 cm x 30 cm x 40 cm	1 (one) bottle, 500 ml total	3 kg
Emergency Response: 509-373-3800 ERG Number: 154 Total volume = 500 ml.					
Total No. Containers: 1	Gross Wt of Shipment: 3 kg				

CONTENT DESCRIPTION

See 49 CFR 172.101(c) Hazardous Material Table

Proper Ship Name: Corrosive liquid, basic, inorganic, n.o.s.
Hazard Class: Class 8, PG II
UN/NA No.: UN 3266
List Secondary Hazards: None
List Labels Req'd/Applied Class 8

Proper Ship Name: ~~Limited Quantity per~~
Hazard Class: ~~49 CFR 173.154~~ Packaged
UN/NA No.: per IATA 808 packing
List Secondary Hazards: and IATA State
List Labels Req'd/Applied Variation USG-14

Proper Ship Name: Pkg contains HEIS
Hazard Class: sample no. BOTJT1
UN/NA No.:
List Secondary Hazards: 500 ml total
List Labels Req'd/Applied volume in pkg

Identify Placards Required: 1. None-Excepted. 2. 3. 4.

Identify Property Control or Return Order No.: (if applicable)

Material in manufacturers original container: ☐ Yes ☒ No
Container free of deterioration or damage: ☒ Yes
Container acceptability documented: ☒ Yes
Material is packaged, sealed, marked and labelled to meet DOT requirements: ☒ Yes

Describe Internal Packaging: 500 ml poly container packed in 1 Liter glass overpack jar. 1 Liter jar inside IP3 inner container with vermiculite sorbent. IP3 packed inside 4G fiberboard box with spacing/cushioning device.

Survey No.: Not Radioactive - see attached Total Activity Report.
Date:
RM Signature:
Print Name:

CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation:

This shipment is within the Limitations prescribed for: ☒ Passenger Aircraft ☐ Cargo Aircraft ☐ NA

Authorizing Signature: Ronald L Clawson Print Name: RONALD L. CLAWSON Date: 3-18-99

FOR OFFSITE SHIPMENTS – ADDITIONAL APPROVAL REQUIRED

B.L. No.	Date Shipped	ETA	Routing	Special Considerations
	3/18/99	3/19/99	FED-X	

WHC Traffic: Greg C. Brown for WHC Shipping:

54-3000-596 (10-87)

HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)

SHIPPING INST.

SHIP TO: Thermo Nutech
Company
2030 Wright Avenue
Address
Richmond CA 94804-0040
City, State, Zip
Larry Johnson
Attention: 510-235-2633

Originating Facility: Building 3728, Area 300
Originator Signature: David E. Johnson
Date: 3/18/99
FROM: ☐ WHC ☐ KEH ☐ PNL ☒ OTHER BHE
OFFSITE ONLY: SHIP: ☒ PREPAID ☐ COLLECT
VIA: ☐ Parcel Post ☐ Air Parcel Post ☐ Freight (Rail/Truck) ☒ Air (Passenger) ☐ Air (Cargo)
Cost Code: ERC-COA BRISC2A2W28

SHIPMENT DESCRIPTION

CONTAINERS/PACKAGING						CONTENT DESCRIPTION
Number of Containers	Type	DOT Spec	Package Dimensions	Quantity Pkg	Gross Wt Each Pkg	See 49 CFR 172.101(c) Hazardous Material Table
1	metal can w/ lock ring inner, steel drum outer	IP3 inner, 1A2 outer	Outer Package 5 gal drum 30cm dia 45cm ht	1-40ml 1-60ml 1-120ml 1-500ml 720ml. Total	5kg	Proper Ship Name: Flammable liquids, n.o.s. Hazard Class: Class 3, PG II UN/NA No.: UN 1993 List Secondary Hazards: Polychlorinated biphenyls Class 9 List Labels Req'd/Applied Class 3 and Class 9
1	metal can w/ lock ring inner, steel drum outer	IP3 inner, 1A2 outer	Outer Package 5 gal drum 30cm dia 45cm ht.	2-40ml 2-60ml 1-500ml 600ml Total	5kg	Proper Ship Name: Flammable liquids, n.o.s. Hazard Class: Class 3, PG II UN/NA No.: UN 1993 List Secondary Hazards: Polychlorinated biphenyls Class 9 List Labels Req'd/Applied Class 3 and Class 9
						Proper Ship Name: Hazard Class: UN/NA No.: List Secondary Hazards: List Labels Req'd/Applied

Total No. Containers	Gross Wt of Shipment	Identify Placards Required:	Identify Property Control or Return Order No.: (if applicable)
See pg 1 of 2	See Page 1 of 2	1. Non-Excepted 3. ____ 2. ____ 4. ____	

Material in manufacturers original container: ☐ Yes ☒ No
Container free of deterioration or damage: ☒ Yes
Container acceptability documented: ☒ Yes
Material is packaged, sealed, marked and labelled to meet DOT requirements ☒ Yes

Describe Internal Packaging: See page 1 of 2

RADIATION RELEASE	Survey No.	Date	RM Signature	Print Name
	Not Radioactive - See attached Total Activity Reports			

CERTIFICATION

CONTRACTORS CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation: SEE PAGE 1

This shipment is within the Limitations prescribed for: ☐ Passenger Aircraft ☐ Cargo Aircraft ☐ NA

Authorizing Signature: _____ Print Name _____ Date: _____

FOR OFFSITE SHIPMENTS – ADDITIONAL APPROVAL REQUIRED

WHC TRAFFIC	B.L. No.	Date Shipped	ETA	Routing	Special Considerations

WHC Traffic: _____ WHC Shipping: _____

HAZARDOUS MATERIAL SHIPMENT RECORD (HMSR)

Page 1 of 2

SHIPPING INST.

SHIP TO:
Company: Thermo Nutech
Address: 2030 Wright Avenue
City, State, Zip: Richmond CA 94804-0010
Attention: Larry Johnson 510-235-2633

Originating Facility: Building 3778, Area 300
Originator Signature: David & John
Date: 3/18/99
FROM: ☐ WHC ☐ KEH ☐ PNL ☒ OTHER ~~BHI~~
OFFSITE ONLY: SHIP: ☒ PREPAID ☐ COLLECT
VIA: ☐ Parcel Post ☐ Air Parcel Post ☐ Freight (Rail/Truck) ☒ Air (Passenger) ☐ Air (Cargo)
Cost Code: ERC-COA BRISC2AZW2B

SHIPMENT DESCRIPTION

CONTAINERS / PACKAGING

Number of Containers	Type	DOT Spec	Package Dimensions	Quantity Pkg	Gross Wt Each Pkg
1	Metal can w/ lock Ring Inner, Steel drum outer	1P3 Inner, 1A2 outer	outer Package 5 gal Drum 30cm dia 45cm ht.	1-40ml 1-60ml 1-500ml 600 ml. Total	5 kg
Emergency Response: 509-373-3800 ERG Numbers: 128 (Flammable) 171 (PCBs) Total volume = 1920ml					

CONTENT DESCRIPTION

See 49 CFR 172.101(c) Hazardous Material Table*

Proper Ship Name: Flammable liquids, n.o.s. ~~(Sample for analysis)~~
Hazard Class: Class 3, PG II
UN/NA No.: UN 1993
List Secondary Hazards: Polychlorinated biphenyls
List Labels Req'd/Applied: Class 3 and Class 9

Proper Ship Name: ~~[illegible] per~~ 7
Hazard Class: ~~49 CFR 173.150~~ and
UN/NA No.: IATA 305 Pkg'd per limitations
List Secondary Hazards: DAS 3/18/99 ~~[illegible]~~ FX-06 and
List Labels Req'd/Applied: IATA State Variation USG-14

Proper Ship Name: Includes ERC HETS
Hazard Class: sample Numbers
UN/NA No.: BOTJR7, BOTJR8, BOTJR9,
List Secondary Hazards: BOTJT0 & BOTJT2.
List Labels Req'd/Applied

Total No. Containers	Gross Wt of Shipment	Identify Placards Required:	Identify Property Control or Return Order No.: (if applicable)
3	15 kg	1. None Excepted 2. ____ 3. ____ 4. ____	

Material in manufacturers original container: ☐ Yes ☒ No
Container free of deterioration or damage: ☒ Yes
Container acceptability documented: ☒ Yes
Material is packaged, sealed, marked and labelled to meet DOT requirements: ☒ Yes

Describe Internal Packaging:
500 ml (or smaller) glass sample containers packed in 1P3 inner can with vermiculite sorbent material and 1P3 can packed in 1A2 drum (outer) with cushioning material.

RADIATION RELEASE | Survey No. | Date | RM Signature | Print Name
Not Radioactive See attached Total Activity Reports

CERTIFICATION

CONTRACTORS CERTIFICATION

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transport according to the applicable regulations of the Department of Transportation:

This shipment is within the Limitations prescribed for: ☒ Passenger Aircraft ☐ Cargo Aircraft ☐ NA

Authorizing Signature: Ronald C Clawson Print Name: Ronald C Clawson Date: 3-18-99

FOR OFFSITE SHIPMENTS – ADDITIONAL APPROVAL REQUIRED

WHC TRAFFIC

B.L. No.	Date Shipped	ETA	Routing	Special Considerations
	3/18/99	3/19/99	FED-X	

WHC Traffic: Gary C Brown for WHC Shipping: ____

54-3000-596 (10-87)

Thermo NUtech - Richmond

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Date/Time received 3-17-99 10:00

CoC No. B99-036-21, 22, 23, 37 & 38 B99-038-18 & 19
+5 gal Drums

Container I.D. No. SML-264 Requested TAT (Days) 45 P.O. Received Yes [ ] No [ ]

INSPECTION

1. Custody seals on shipping container intact? Yes [✓] No [ ] N/A [ ]
2. Custody seals on shipping container dated & signed? Yes [✓] No [ ] N/A [ ]
3. Custody seals on sample containers intact? Yes [✓] No [ ] N/A [ ]
4. Custody seals on sample containers dated & signed? Yes [✓] No [ ] N/A [ ]
5. Cooler Temperature: _____ Packing material is: Wet [ ] Dry [✓]
6. Number of samples in shipping container: _____
7. Number of containers per sample: _____ (Or see CoC ✓)
8. Paperwork agrees with samples? Yes [✓] No [ ]
9. Samples have: Tape [✓] Hazard labels [ ] Rad labels [✓] Appropriate sample labels [✓]
10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]
11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [✓] No [ ] Date 3-14-99
14. Received by [signature] Date: 3-17-99 Time: 10:00

LOGIN

TNU W.O. No. _____ Group No. _____ Client W.O. No. _____

PROGRAM MANAGER

Sample holding times exceeded? Yes [ ] No [ ]

Client Notified: Name _____ Date/time _____